

Name: _____ TP: _____

Homework #39 2-Column Proof

Form A

Geometry

Due Tuesday November 19, 2013

For the remainder of you Geometry year we want to focus on A) creating resourceful mathematicians and B) increasing the amount of time you have to practice problems in class. In order to do this the format of your homework is changing. Your homework will now assess how well you prepare for the upcoming lesson. Your groups will randomly be required to present as a homework grade the items previewed the nights before.

Visit the following Youtube video: <http://tinyurl.com/GeoMCP39> <this link is on the wiki>.

Begin watching at 13:00 and answer/finish the following questions:

Example #1 Given that $2(3x - 1) = 10$, prove that $x = 2$

Statement	Reason
1) $2(3x - 1) = 10$	1)
2) $6x - 2 = 10$	2)
3) $6x = 12$	3)
4) $x = 2$	4)

Example #2 Given: $m\angle 1 \cong m\angle 3$ Prove $\angle DOB \cong \angle AOC$

Statement	Reason
1)	1)
2)	2)
3)	3)
4)	4)
5)	5)
6)	6)

Example #3 C is a midpoint of line AB. Prove: $x = 8.5$

Statement	Reason
1)	1)
2)	2)
3)	3)
4)	4)
5)	5)
6)	6)

You should approach each problem as an exploration. Problem-solving requires persistence as much as it requires ingenuity. When you get stuck, or solve a problem incorrectly, back up and start over. Keep in mind that you're probably not the only one who is stuck, and that may even include your teacher. **If you have taken the time to think about a problem, you should bring to class a written record of your efforts, not just a blank space in your notebook.** The methods that you use to solve a problem, the corrections that you make in your approach, the means by which you test the validity of your solutions, and your ability to communicate ideas are just as important as getting the correct answer.

STAY READY.

Solve all of the problems on a piece of paper **STAPLED TO YOUR HOMEWORK**. If you are stuck and cannot answer a question, write at least three complete sentences about the problem and what you do know. Use at least one of the sentence starters below:

- Even though I am stuck, I do know...and I think I should...because...
- I am stuck because I do not know what ____ means. I think it means...so I tried...
- I got this answer but I think it is wrong because...

You may choose this option for only ONE problem.

Remember that you can always use old notes, a dictionary, math textbook, and/or look up topics online!

SEE FOLLOWING GRAPH PAPER

1) Let $A = (0, 0)$, $B = (7, 1)$, $C = (12, 6)$, and $D = (5, 5)$.

- Plot these points and connect the dots to form the quadrilateral ABCD (you must attach a piece of graph paper for this problem).
- Verify that all four sides have the same length (verify means to state the length of each side, but also to explain how you determined the side length. Use numbers and words!)
- What is a polygon called when all sides are the same length (write your answer in a complete sentence)?

2) Which number is closer to zero, $-4/5$ or $5/4$?

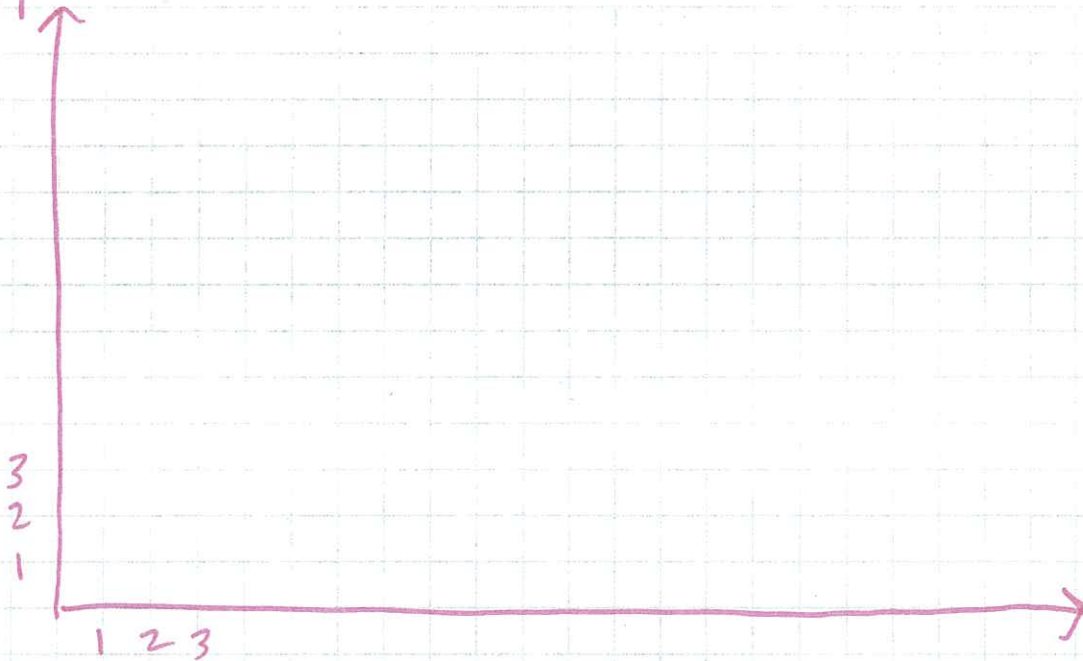
- Draw a number line and place both fractions on the number line.
- Explain how you know which number is closer to zero being as specific as possible.

3) Write an expression that represents the number that (be careful about the order of the number, operation, and variable):

- is 7 more than x (for example: $x + 7$)
- is 7 less than x
- is x more than 7
- exceeds x by 7
- is x less than 7
- exceeds 7 by x .
- is one-seventh of x

HW39

①



A) PLOT! (x, y)
(walk, jump)

B) PROVE each side is the same length. What do you need to do this? SHOW your work.

C) (complete sentence)

② HINT: change the fractions into decimals!

A) DRAW # lines & plot points:

B) EXPLAIN which is closer!



③ More than \rightarrow \oplus ____ (after)

Less than \rightarrow \ominus ____ (after)

\oplus
sum
increase
exceed
more

\ominus
difference
decrease
reduces
less

*Write out each expression:

a. is 7 more than $x \rightarrow x+7$

b. is 7 less than $x \rightarrow$

c.

d.

e.

f.

g.

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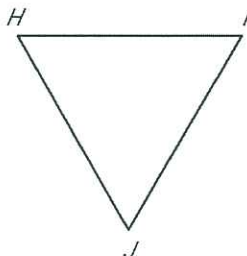
Homework #40 2-Column Proofs Cont.

Form A

Geometry

Due Wednesday, November 20th, 2013

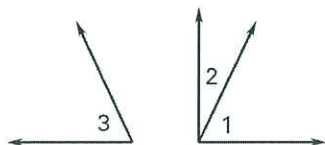
1. **GIVEN:** $HI = 9$, $IJ = 9$, $\overline{IJ} \cong \overline{JH}$
PROVE: $\overline{HI} \cong \overline{JH}$



Statements	Reasons
1. $HI = 9$	1.
2. $IJ = 9$	2.
3. $HI = IJ$	3.
4. $\overline{HI} \cong \overline{IJ}$	4.
5. $\overline{IJ} \cong \overline{JH}$	5.
6. $\overline{HI} \cong \overline{JH}$	6.

2. **GIVEN:** $\angle 3$ and $\angle 2$ are complementary.
 $m\angle 1 + m\angle 2 = 90^\circ$

PROVE: $\angle 3 \cong \angle 1$



Statements	Reasons
1. $\angle 3$ and $\angle 2$ are complementary	1.
2. $m\angle 1 + m\angle 2 = 90^\circ$	2.
3. $m\angle 3 + m\angle 2 = 90^\circ$	3.
4. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	4.
5. $m\angle 1 = m\angle 3$	5.
6. $\angle 1 \cong \angle 3$	6.

STAY READY.

You should approach each problem as an exploration. Problem-solving requires persistence as much as it requires ingenuity. When you get stuck, or solve a problem incorrectly, back up and start over. Keep in mind that you're probably not the only one who is stuck, and that may even include your teacher. **If you have taken the time to think about a problem, you should bring to class a written record of your efforts, not just a blank space in your notebook.** The methods that you use to solve a problem, the corrections that you make in your approach, the means by which you test the validity of your solutions, and your ability to communicate ideas are just as important as getting the correct answer.

Solve all of the problems on a piece of paper **STAPLED TO YOUR HOMEWORK**. If you are stuck and cannot answer a question, write at least three complete sentences about the problem and what you do know. Use at least one of the sentence starters below:

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- I am stuck because I do not know what ____ means. I think it means...so I tried...
- I got this answer but I think it is wrong because...

For only problem one max.

Remember that you can always use old notes, a dictionary, math textbook, and/or look up topics online!

**SEE following graph paper*

1) Ryan took 25 minutes to type the final draft of a 1200-word English paper. How much time should Ryan expect to spend typing the final draft of a 4000-word History paper?

2) Which of the following seven expressions does not belong in the list (*hint: Simplify all expressions and then compare! Watch for the sign of the variable – is it positive or negative*)?

- $a - b + c$
- $c - b + a$
- $c - (b - a)$
- $-b + a + c$
- $a - (b - c)$
- $b - (c - a)$
- $a + c - b$

3) The sides of a rectangle in the coordinate plane are parallel to the axes. Two of the vertices of the rectangle are $(3, -2)$ and $(-4, -7)$. Find coordinates for the other two vertices. Find the area of the rectangle.

HW40

① Make a table!

Minutes	Word-length

- Place a variable where you are missing information.
- Set up a proportion!
- cross-multiply & solve!

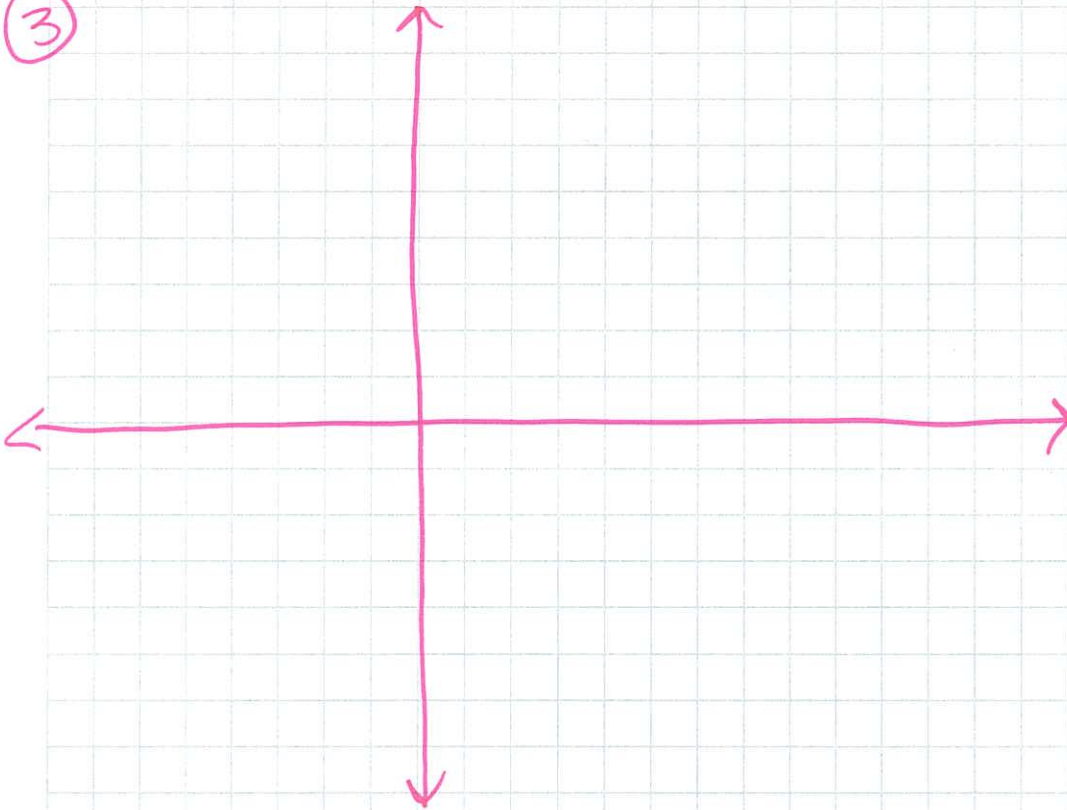
② Make a table! → For a, b, c, write if it's + or -
→ Fill in "belongs?" after everything else.

Expression	Simplified	a	b	c	Belongs?
$a - b + c$	$a - b + c$	+	-	+	✓ yes
$c - b + a$	$c - (b - a)$ $c - b + a$	+	-	+	✓ yes
$-b + a + c$					
$a - (b - c)$ *Distribute!					
$b - (c - a)$					
$a + c - b$					

HW40

PrintFreeGraphPaper.com

3



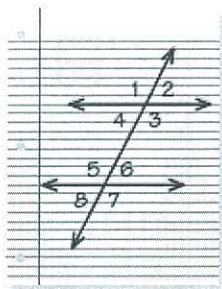
- Step 1: Plot points!
- Step 2: Create a rectangle by drawing straight lines to get to the opposite point.
- Step 3: Count units for width & length & plug into AREA of rectangle formula.

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Homework #41 2-Column Proof
Form A Geometry
 Due Thursday November 21, 2013

Directions: Read the prompt below. Respond to the prompt in at least 5 sentences. Your response will be scored out of 10 points on the rubric.

Refer to the figure below. What is the least number of angle measures you need in order to find the measure of every angle? Explain your reasoning.



BACKGROUND INFO:

$\angle 1 \cong \angle 3$; $\angle 4 \cong \angle 2$ by **VERTICAL** angles
 $\angle 1 \cong \angle 5$; $\angle 2 \cong \angle 6$ by **CORRESPONDING** angles.

Use the info. above, & **MARK UP** the diagram to help you determine the **LEAST** amount of angles you need to know to find **ALL** measures.

Criteria	0	1	2
Thesis/Answer	Thesis/Answer is incorrect.	Thesis/Answer is correct, but has small errors in wording and/or vocabulary.	Thesis is relevant, accurately stated and addresses the prompt.
Defense	Explanation does not answer the question as given.	Explanation attempts to answer the question, but is missing one or more correct pieces.	Explanation is completely correct.
Vocabulary	Vocabulary is used incorrectly or vocabulary terms unrelated to the prompt are used.	Vocabulary is used correctly in most places, but there are one or two errors in understanding.	All math vocabulary is used correctly and demonstrates knowledge in context.
Grammar	Explanation cannot be understood clearly after two readings.	Explanation requires two readings for the teacher to understand.	Explanation can be read and comprehended easily in one reading.
Professionalism	Explanation is incomplete.	Explanation is complete with minimum effort.	Explanation exceeds minimum effort or shows a great deal of thought and/or quality.

STAY READY.

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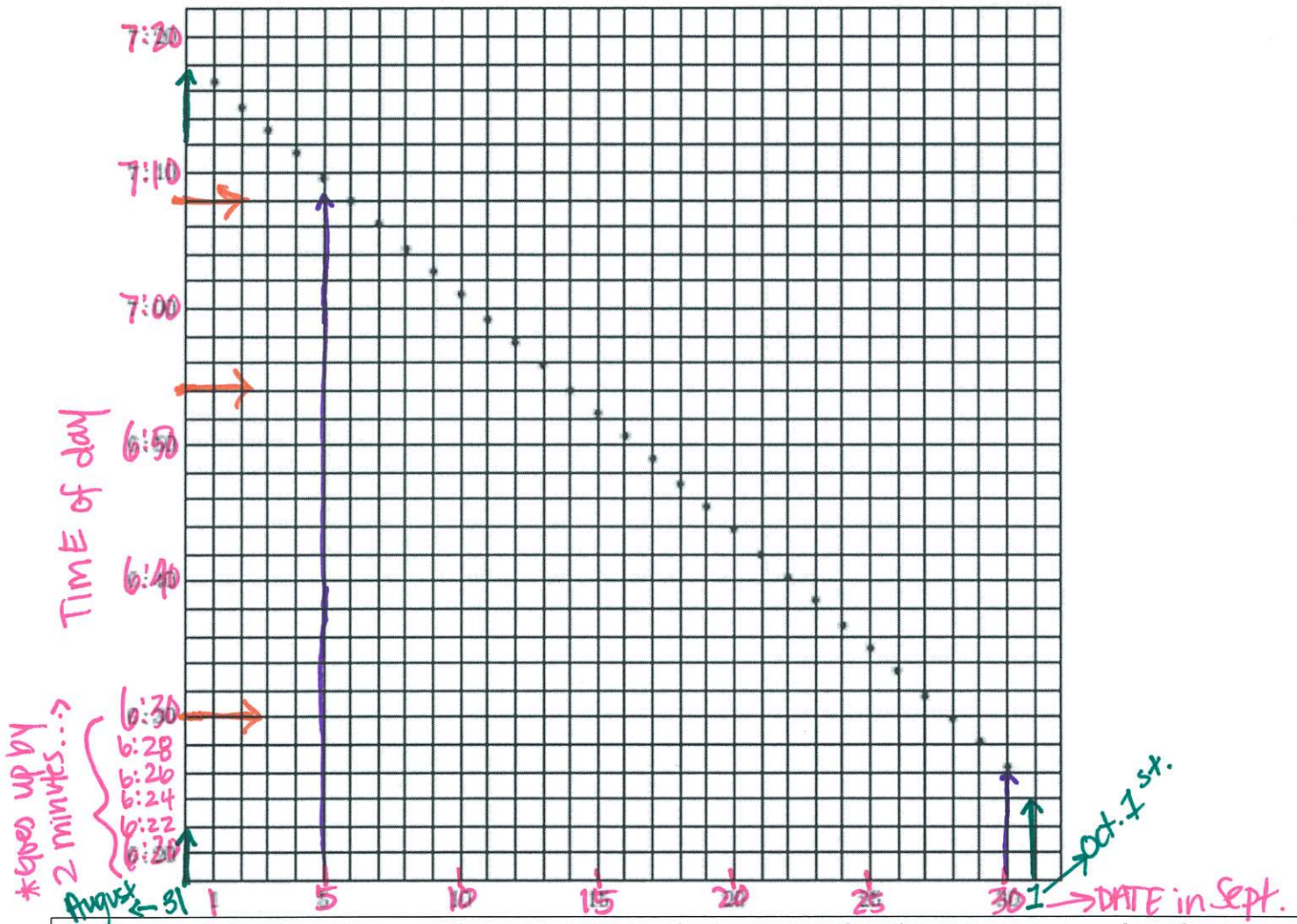
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> For only ONE problem MAX.

*USE following graph paper.

Remember that you can always use old notes, a dictionary, math textbook, and/or look up topics online!



1) The graph displays the time of sunset at Exeter during September (time is represented on the y-axis and date is represented on the x-axis). Some questions:

- At what time did the sun set on the 5th of September? on the 30th of September? Find purple above.
- On what day does the sun set at 6:54? at 7:08? at 6:30? Find orange above. Follow line until you see a point!
- Guess the time of sunset on the 1st of October and on the 31st of August. Find green. Make prediction!
- What is the average daily change (we call this the SLOPE of the line) of sunset time during the month of September? SLOPE = RISE = How many minutes is the time decreasing

RUN

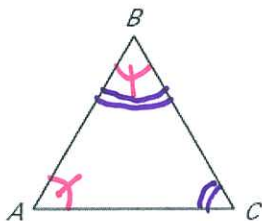
STAY READY. How many days

Name: _____ TP: _____

1) Use the Transitive Property

GIVEN: $m\angle A = m\angle B$
 $m\angle C = m\angle B$ > MARK up diagram.

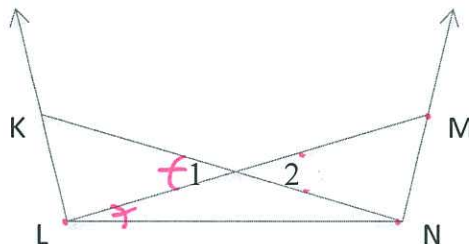
PROVE: $\angle A \cong \angle C$



Statement	Reason
① _____	① Given
② $m\angle C = m\angle B$	② _____
③ $m\angle B = m\angle C$	③ _____
④ _____	④ Transitive

2) Use Vertical Angles

Given: $\angle MLN \cong \angle 1$
Prove: $\angle MLN \cong \angle 2$



Statement	Reason
① _____	① _____
② $\angle 1 \cong \angle 2$	② _____
③ _____	③ _____

3) When $x = 9$, $x^2 = 81$.

True/False *

5) Conditional Statement	If _____, then _____.	
Converse *FLIP*	If _____, then _____.	
Inverse *NEGATE*	If _____ \neq _____, then _____.	
Contrapositive *FLIP & NEGATE*	If _____ \neq _____, then _____.	

***IF THE STATEMENT IS FALSE, YOU MUST PROVIDE A COUNTEREXAMPLE IN THE SPACE PROVIDED!

STAY READY.

*If you have ONE counterexample, the answer is FALSE.

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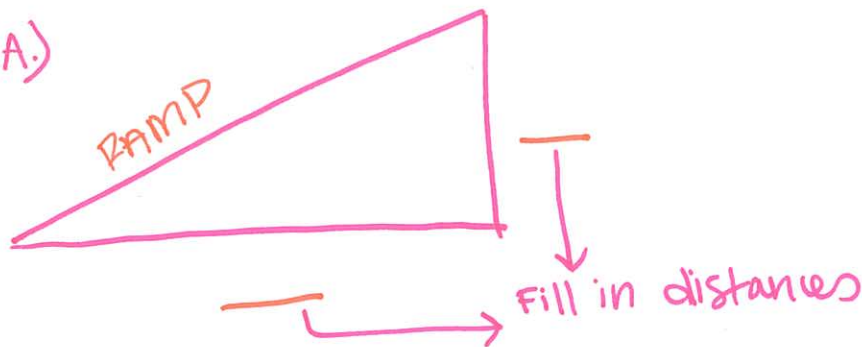
Remember that you can always use old notes, a dictionary, math textbook, and/or look up topics online!

1) A handicapped-access ramp starts at ground level and rises 27 inches over a distance of 30 feet. What is the slope of this ramp?

- Draw a picture of the ramp, and label the distances.
- Identify the slope and explain how you arrived at that answer.

2) Chandler was given \$75 for a birthday present. This present, along with earnings from a summer job, is being set aside for a mountain bike. The job pays \$6 per hour, and the bike costs \$345. To be able to buy the bike, how many hours does Chandler need to work?

① A.)



B.) Slope = $\frac{\text{RISE}}{\text{RUN}}$

Now... answer in a complete sentence:

② make an equation!

Money Chandler has from BDAY \oplus \$6 per hour = Total \$ of bike

\oplus

We don't know how many hours! Use a _____ = _____

*SOLVE for x, which represents! STAY READY.

Name: _____ TP: _____

Define the following key terms and write down everything you know about them.

Inductive Reasoning: USE your notes OR look terms up online!Deductive Reasoning: _____

_____Negate: _____

_____Converse: _____

_____Contrapositive: _____

_____Inverse: _____

_____Conditional Statement: _____

_____Conjecture: _____

_____Review your notes on classwork **39 and 40** and study the **Algebraic Properties of Equality**. Review the **Reflexive, Symmetric and Transitive Properties**.*If you have any outstanding questions about any of these things, write them down here to make sure you are able to ask them before the test on Monday.*

GIVE AN EXAMPLE of:

Reflexive

$$\overline{AB} = \overline{AB}$$

Symmetric

Transitive

STAY READY.

FILL IN!

*Inductive: based on pattern, observation, or personal experience.
 *Deductive: Based on proof, law, or rule.

Both of the following arrive at the same conclusion. What makes one inductive reasoning and the other deductive reasoning?

While doing her homework, Taniya noticed the following pattern:

$$\sqrt{2} \cdot \sqrt{2} = \sqrt{4} = 2$$

$$\sqrt{3} \cdot \sqrt{3} = \sqrt{9} = 3$$

$$\sqrt{4} \cdot \sqrt{4} = \sqrt{16} = 4$$

So, she decides that if you are multiplying by the same radicand, you can simply rewrite the radicand without the radical:

$$\sqrt{x} \cdot \sqrt{x} = x$$

Today in class, Ms. Ziegler stated the following rule:

$$\sqrt{x} \cdot \sqrt{x} = x$$

Therefore, Elena knows that if $x = 7$, then the following will apply:

$$\sqrt{7} \cdot \sqrt{7} = 7$$

Following the same logic, would the following be inductive or deductive reasoning and how do you know?

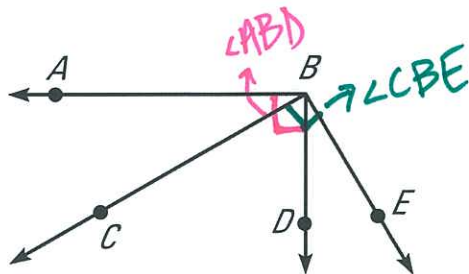
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15...

Inductive reasoning can be proved wrong. If you said the above was inductive reasoning, write a counter example for the pattern to show that the conjecture would be wrong.

Create a proof for the following problem:

GIVEN ▶ $\angle ABD$ is a right angle.
 $\angle CBE$ is a right angle.

PROVE ▶ $\angle ABC \cong \angle DBE$



Same, but for $\angle CBE \rightarrow$

Statement

Reason

①

②

③ $\angle ABD = 90^\circ$

④ $\angle CBE = 90^\circ$

⑤ $\angle ABD = \angle CBE$

⑥ $\angle ABC + \angle CBD = \angle ABD$

Same, but for $\angle CBE \rightarrow$

⑧ $\angle ABC + \angle CBD = \angle CBE$

STAY READY.

⑨ $\angle ABC \cong \angle DBE$

①

②

③ Definition of right angle.

④

⑤

⑥

⑦

⑧

⑨